



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 21.5

ProLiant DL165 G5
(2.7 GHz AMD Opteron 2384)

SPECfp_base2006 = 19.5

CPU2006 license: 3

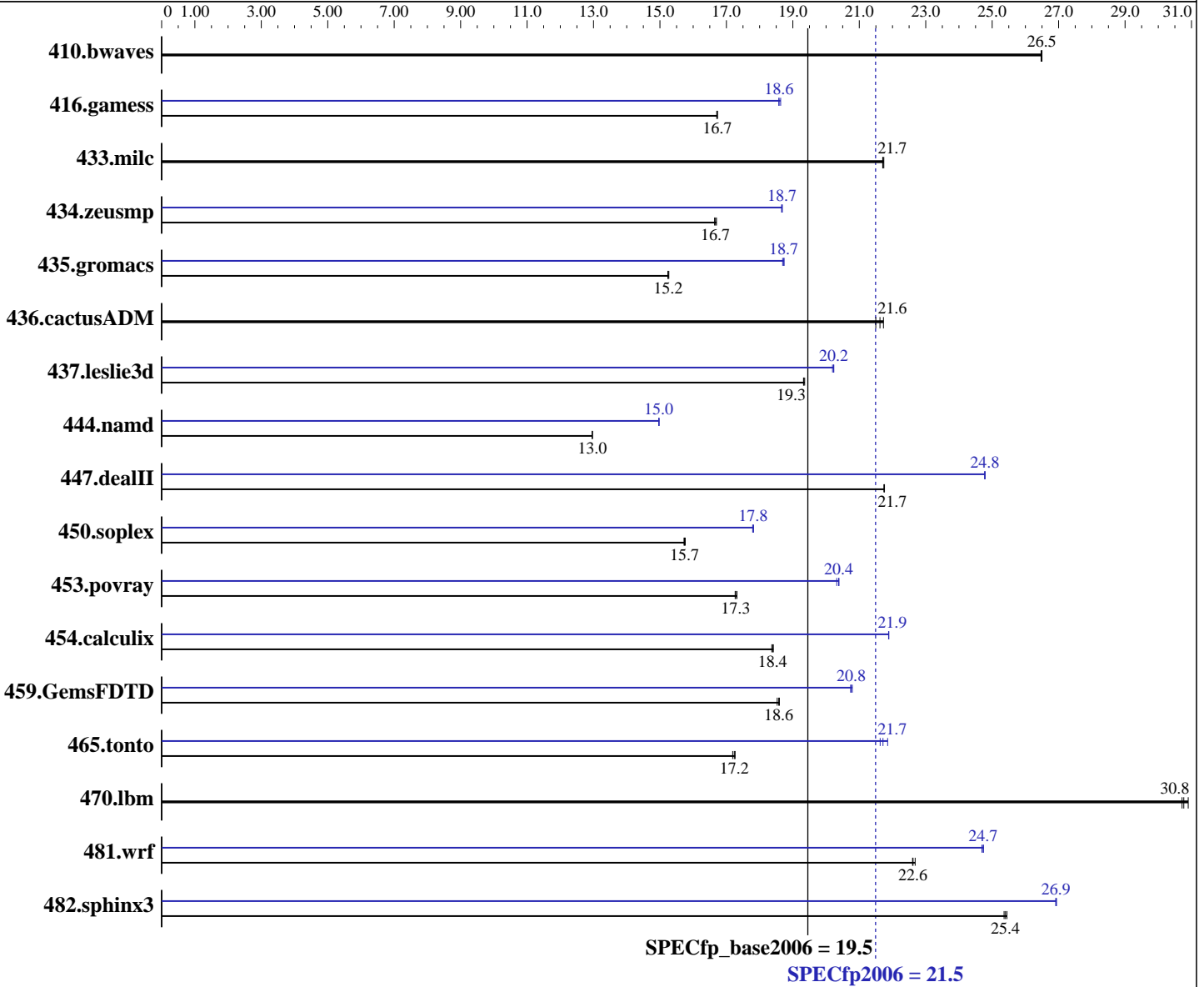
Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Jan-2009

Hardware Availability: Nov-2008

Software Availability: Jun-2008



Hardware

CPU Name: AMD Opteron 2384
 CPU Characteristics:
 CPU MHz: 2700
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.2
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

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L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 16 GB (4x4 GB, PC2-6400P CL5)
Disk Subsystem: 1x72 GB 15K SAS
Other Hardware: None

Other Software: binutils 2.18
32-bit and 64-bit libhugetlbfs libraries

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	513	26.5	513	26.5	513	26.5	513	26.5	513	26.5	513	26.5
416.gamess	1170	16.7	1171	16.7	1172	16.7	1054	18.6	1051	18.6	1053	18.6
433.milc	423	21.7	422	21.7	423	21.7	423	21.7	422	21.7	423	21.7
434.zeusmp	547	16.6	545	16.7	546	16.7	487	18.7	487	18.7	488	18.7
435.gromacs	469	15.2	468	15.3	468	15.2	381	18.7	381	18.7	382	18.7
436.cactusADM	556	21.5	553	21.6	550	21.7	556	21.5	553	21.6	550	21.7
437.leslie3d	486	19.3	486	19.4	487	19.3	465	20.2	465	20.2	465	20.2
444.namd	619	13.0	619	13.0	619	13.0	535	15.0	536	15.0	536	15.0
447.dealII	526	21.7	526	21.8	526	21.7	462	24.8	462	24.8	462	24.8
450.soplex	529	15.8	530	15.7	530	15.7	469	17.8	468	17.8	468	17.8
453.povray	308	17.3	308	17.3	307	17.3	262	20.3	261	20.4	261	20.4
454.calculix	449	18.4	449	18.4	448	18.4	377	21.9	377	21.9	377	21.9
459.GemsFDTD	573	18.5	571	18.6	571	18.6	510	20.8	511	20.8	512	20.7
465.tonto	571	17.2	570	17.3	572	17.2	455	21.6	453	21.7	450	21.9
470.lbm	447	30.8	445	30.9	447	30.7	447	30.8	445	30.9	447	30.7
481.wrf	492	22.7	494	22.6	494	22.6	452	24.7	452	24.7	452	24.7
482.sphinx3	769	25.4	767	25.4	766	25.4	724	26.9	724	26.9	724	26.9

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The config file option 'submit' was used.
numactl was used to bind copies to the cores

Operating System Notes

Environment stack size set to 'unlimited'
Max locked memory set to 2097152
The libhugetlbfs libraries were installed using the installation rpms that came with the distribution.
PGI_HUGE_PAGES set to 896.
Total number of huge pages available is 3584.
NCPUS set to number of cores



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Platform Notes

BIOS configuration:

Power Regulator set to Static High Performance Mode

General Notes

Environment variables set by runspec before the start of the run:

HUGETLB_MORECORE = "yes"

Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

Fortran benchmarks:

pgf95

Benchmarks using both Fortran and C:

pgcc pgf95

Base Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -Mnomain
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deallI: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

```



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Base Optimization Flags

C benchmarks:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
--zc_eh -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:

-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc=huge
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Benchmarks using both Fortran and C:

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Base Other Flags

C benchmarks:

-Mipa=jobs:4

C++ benchmarks:

-Mipa=jobs:4

Fortran benchmarks:

-Mipa=jobs:4

Benchmarks using both Fortran and C:

-Mipa=jobs:4

Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks (except as noted below):

pathCC

444.namd: pgcpp

Fortran benchmarks (except as noted below):

pathf95

410.bwaves: pgf95

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Peak Compiler Invocation (Continued)

434.zeusmp: pgf95

437.leslie3d: pgf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95

435.gromacs: pathcc pathf95

481.wrf: pathcc pathf95

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
 416.gamess: -DSPEC_CPU_LP64
 433.milc: -DSPEC_CPU_LP64
 434.zeusmp: -DSPEC_CPU_LP64
 435.gromacs: -DSPEC_CPU_LP64
 436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
 437.leslie3d: -DSPEC_CPU_LP64
 444.namd: -DSPEC_CPU_LP64
 453.povray: -DSPEC_CPU_LP64
 454.calculix: -DSPEC_CPU_LP64 -Mnomain
 459.GemsFDTD: -DSPEC_CPU_LP64
 465.tonto: -DSPEC_CPU_LP64
 470.lbm: -DSPEC_CPU_LP64
 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
 482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)
 -Mipa=fast(pass 2) -Mipa=inline(pass 2)
 -Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc
 -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

444.namd: -Mphi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
 -Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
 -Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge -Mnodepch

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Peak Optimization Flags (Continued)

444.namd (continued):

-Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi

447.dealII: -march=barcelona -Ofast -INLINE:aggressive=on -LNO:opt=0

-OPT:alias=disjoint -fno-exceptions -m32

450.soplex: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -L/usr/lib -lhugetlbfs(pass 2) -O3

-INLINE:aggressive=on -OPT:IEEE_arith=3

-OPT:IEEE_NaN_Inf=off -OPT:fold_unsigned_relops=on

-OPT:malloc_alg=1 -CG:load_exe=0 -fno-exceptions -m32

453.povray: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -march=barcelona -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2)

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)

-L/usr/lib64 -lhugetlbfs(pass 2) -O2 -OPT:Ofast -OPT:ro=3

-OPT:unroll_size=256

434.zeusmp: -Mvect=cachesize:6291456 -fastsse -Mfprelaxed

-Mprefetch=distance:8 -Mprefetch=t0 -Msmartalloc=huge

-Msmartalloc=hugebss -Mipa=fast -Mipa=inline

-tp barcelona-64 -Bstatic_pgi

437.leslie3d: -Mphi=indirect(pass 1) -Mpfo=indirect(pass 2)

-Mipa=fast(pass 2) -Mipa=inline(pass 2)

-Mvect=cachesize:6291456 -fastsse -Mvect=fuse

-Msmartalloc=huge -Mprefetch=distance:8 -Mprefetch=t0

-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

459.GemsFDTD: -march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2

-LNO:prefetch_ahead=1 -CG:load_exe=0 -CG:prefer_lru_reg=off

-OPT:malloc_alg=1

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT

-L/usr/lib64 -lhugetlbfs

465.tonto: -march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias

-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525

-OPT:malloc_alg=1

-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT

-L/usr/lib64 -lhugetlbfs

Benchmarks using both Fortran and C:

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Peak Optimization Flags (Continued)

435.gromacs: -march=barcelona -Ofast -OPT:rsqrt=2 -OPT:malloc_alg=1
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lugetlbfs

436.cactusADM: basepeak = yes

454.calculix: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mprefetch=t0 -Mpre -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

481.wrf: -march=barcelona -Ofast -LNO:blocking=off
-LNO:prefetch_ahead=10 -LANG:copyinout=off
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on
-OPT:malloc_alg=1 -m3dnow
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lugetlbfs

Peak Other Flags

C benchmarks:

-Mipa=jobs:4(pass 2)

C++ benchmarks:

444.namd: -Mipa=jobs:4(pass 2)

Fortran benchmarks (except as noted below):

-Mipa=jobs:4(pass 2)

416.gamess: No flags used

459.GemsFDTD: No flags used

465.tonto: No flags used

Benchmarks using both Fortran and C (except as noted below):

-Mipa=jobs:4(pass 2)

435.gromacs: No flags used

481.wrf: No flags used

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/pgi72_linux_flags.html

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.html>



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You can also download the XML flags sources by saving the following links:

- http://www.spec.org/cpu2006/flags/pgi72_linux_flags.xml
- http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml
- <http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.xml>

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